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10/541,130

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EXAMINER

COHEN, JODI F

ART UNIT

PAPER NUMBER

1791

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/541,130	<b>Applicant(s)</b> MAK ET AL.	
	<b>Examiner</b> Jodi Cohen	<b>Art Unit</b> 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 November 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-29 and 31 is/are pending in the application.
- 4a) Of the above claim(s) 30 and 32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 and 31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>06/22/2006</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Election/Restrictions*

1. Claim 30 is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected product, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 11/18/2008.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. Claims 1-29 and 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
4. Claim 1 recites the limitation "the premix". There is insufficient antecedent basis for this limitation in the claim. Previously in the claims the only premix recited is "a cementitious premix." Applicant should please note there are a variety of discrepancies between "a cementitious premix," "the premix," "a cast premix" and so on. It is necessary for the applicant to remain consistent with terminology throughout the claims. Appropriate correction is required.
5. The term "relatively low density" in claim 1 is a relative term which renders the claim indefinite. The term "relatively low density" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one

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of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

6. Claim 1 recites the limitation "the desired porosity profile" in lines 13-14. There is insufficient antecedent basis for this limitation in the claim.

7. Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention. Currently claim 3 does not discuss any active step. There is no active step of fabricating the lid, rather a description of how it is fabricated.

8. Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear what premix the term "premix" is referring to.

9. The term "quality of finish" in claims 5 and 6 is a relative term which renders the claim indefinite. The term "quality of finish" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

10. Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear what premix the term "a cast premix" is referring to.

11. Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to point out what is included or excluded by the claim language. The term "by use of a sparging apparatus" leaves it unclear how the sparging apparatus is used.

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12. The term "appropriate additives" in claim 11 is a relative term which renders the claim indefinite. The term "appropriate additives" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

13. Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear what premix the term "premix" is referring to.

14. The term "relatively low residual water content" in claim 25 is a relative term which renders the claim indefinite. The term "relatively low residual water content" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

15. Claim 28 recites the limitation "the premix" in line 8. There is insufficient antecedent basis for this limitation in the claim.

16. The term "relatively low density" in claim 30 is a relative term which renders the claim indefinite. The term "relatively low density" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

***Claim Rejections - 35 USC § 102***

17. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

18. Claims 1, 10-11, 13-14, 16-17, 27-29, and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Jensen (US 20020047223) herein after referred to as '223.

Regarding claims 1, 17, and 29, '223 discloses a method of manufacturing a porous cementitious product, which method comprises:

forming a cementitious slurry, or premix;

pouring the slurry into a mold;

generating gas bubbles within the slurry via foaming agent (103) and a mixer;

and curing the slurry mixture,

wherein the gas bubbles are collapsed at the interface of the mold and slurry in order a relatively low density core region and higher density outer region, or skin [0029]-[0032].

Regarding claims 10-11, '223 discloses cementitious slurry comprising a selection of specific components and composition having a certain viscosity at a selected temperature to resist migration of the air cells, or bubbles. [0079]

Regarding claims 13, '223 discloses controlling the amount of foaming and collapsing of bubbles in order to produce a product with a specific strength and density [0086].

Regarding claim 14, '223 discloses dense outer shells of different strengths and densities may be formed by applying different amounts of compression to the cementitious slurry [0083], [0086]

Regarding claim 16, '223 discloses that the cementitious product may be finished by cutting the molded product into a plurality of cement products [0008], [0105].

Regarding claim 27, '223 discloses imparting a patterned surface on the product [0039], [0088].

Regarding claim 28, '223 discusses making various cementitious products using the method discussed above. Furthermore '223 discusses a single cementitious premix wherein the strength to density ratio of each cementitious product is controlled by the amount of compression of the premix within the mold [0083], [0087], which is considered to be varying the degree confinement of the premix.

Regarding claim 32, '223 discloses a lid (404) in order to compress, and thus restrain, the rising of the premix, which causes collapsing of expanding premix on contact with the lid [0083], [0086]-[0087].

### ***Claim Rejections - 35 USC § 103***

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

20. Claims 3, 6, 15, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jensen (US 20020047223) as applied to claim 1 above.

Regarding claim 6, '223 discloses using vibrations, after the mix has been poured into the mold, to collapse bubbles in order to alter the density of the cementitious slurry. It would have been obvious to one of ordinary skill in the art at the time of the invention through routine experimentation, to have determined an optimum frequency and amplitude for vibrating the mixture because '223 teaches vibrating the mixture in order to alter the porosity of the mixture[0079]. See MPEP 2144.05

Regarding claim 15, '223 does not explicitly disclose the strength to density ratio of the cementitious product is controlled by selection based on premix strength. '223 discloses controlling the amount of foaming or incorporation of fibers within the cementitious slurry in order to produce a product with a specific strength and density [0020], [0086]. Thus, it would have been obvious to one of ordinary skill in the art that the composition and properties of the cementitious slurry directly affects the strength of the cementitious product.

Regarding claim 26, '223 discloses the cementitious product is a building unit [0021]. Moreover, a wall unit and roofing tile are all units encompassed by the term "building unit". A building unit can be formed in any shape; furthermore the shape of the cementitious object would be dependent on the mold and a matter of design choice to one of ordinary skill in the art. See MPEP 2144.02



Regarding claim 3, '223 discloses a method of manufacturing a porous cementitious product wherein cementitious slurry is compressed within a mold by a lid in order to force out air cells at the lid/ slurry interface to create a dense outer layer [0083], [0087]. '223 does not disclose the lid of is fabricated to allow gas dissipation, however, it would have been obvious to one of ordinary skill in the art that if the purpose of the lid is to force air out, it would be obvious for a person of ordinary skill in the art to have the lid be capable of allowing the gas to dissipate.

21. Claims 4 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jensen (US 20020047223) as applied to claim 1 above and further in view of Hansen (US 5039249) herein after referred to as '246.

Regarding Claims 4 and 16, '223 discloses mixing and vibrating the cementitious slurry as well as smoothing, or imparting a pattern to the slurry via lid (404), which can all be considered forms of screeding, wherein the application of the lid simultaneously causes collapsing of air bubbles within the slurry. However '223 does not explicitly teach trowelling or screeding the slurry mixture.

Hansen teaches screeding and trowelling art known methods in the art for smoothing and leveling concrete or cement mixtures. Thus, it would have been obvious to one of ordinary skill in the art to smooth or spread the cementitious slurry by any additional method known in the art, such as screeding or trowelling which Hansen specifically teaches to smooth or level concrete mixtures.

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22. Claims 2, 5, 12, 18-23, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jensen (US 20020047223) as applied to claim 1 above, and further in view of Shi et al. (US 20020117086), referred to as '086 herein after.

Regarding claims 2 and 12, '223 discloses a method of making a porous cementitious product as discussed above however; is silent about the inclusion of additives such as a heat activated gas generating agent, or a superplasticizer.

'086 discloses a method for making lightweight concrete materials comprising air pores wherein the bubbles that create the air pores are generated by a heat activated gas-forming agent such as aluminum sulfate [0039], [0053]. Additionally '086 discloses incorporating a superplasticizer within the cementitious slurry in order to approve the workability and flowability, or viscosity, of the slurry [0052], [0071].

Both '223 and '086 disclose making cementitious products by incorporating bubbles within a cement premix to create voids. '223 teaches mixing of a foaming agent [0077] within the premix to generate bubbles, while '086 discloses using foaming agent or aluminum sulfate to generate bubbles within the premix. Thus it would have been obvious to one of ordinary skill in the art to substitute the gas-producing aluminum sulfate taught by '086 for the foaming agent in the method of '223 to obtain the predictable result of creating voids within a cementitious premix. Furthermore it would have been obvious to one of ordinary skill in the art to incorporate other additives known in the art, such as a superplasticizer, in order to improve characteristics, such as the flowability, of the cementitious slurry. See MPEP 2141

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Regarding claim 5, '223 discloses using vibrations, after the mix has been poured into the mold, to collapse bubbles in order to alter the density of the cementitious slurry. It would have been obvious to one of ordinary skill in the art at the time of the invention through routine experimentation, to have determined an optimum frequency and amplitude for vibrating the mixture because '223 teaches vibrating the mixture in order to alter the porosity of the mixture[0079]. See MPEP 2144.05

Regarding claims 18-23, '223 discloses a method of making a porous cementitious product as discussed above, however '223 is silent about the composition and characteristics of the cementitious slurry. '086 also discloses a method for making a porous cementitious product comprising a cementitious slurry; infusing the slurry with bubbles and curing the slurry to produce a lightweight concrete products with compressive strengths ranging from 1000 psi, or 6.89 MPa, to about 6,000 psi, or 41 MPa, and preferably of 14.3 MPa wherein the compressive strength after 14 hours of curing is 75% to about 90% of the 28 day curing strength. Furthermore, '086 discloses the concrete products having a dry density ranging from 45 lbs/ft<sup>3</sup>, or 720 kg/m<sup>3</sup>, to about 90 lbs/ft<sup>3</sup>, or 1441 kg/m<sup>3</sup>, and preferably about 1086 kg/m<sup>3</sup>. '086 also discusses the use of fiber ensures the stability of the cellular structure and the aggregate in the concrete mixture slurry, and increases the flexural strength (Tables 1-5, [0020], [0029], and [0071]).

Both '223 and '086 disclose making cementitious products by incorporating voids within a cement/ concrete slurry. '223 teaches a method for manufacturing the porous cementitious product however '223 is silent about the composition of the cementitious

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slurry to be cast into the mold. '617 discloses a high strength concrete mixture comprising a specific composition and selection of additives for making cementitious product with specific properties as discussed above. Thus it would have been obvious to one of ordinary skill in the art to apply the method of '223 to the cementitious composition with the properties as taught by '617 to yield the predictable results of a molded cementitious product with a dense outer skin and a desirable compressive strength and dry density. Furthermore it would have been obvious to one of ordinary skill in the art through ordinary experimentation to determine the optimum composition comprising the additives as taught in '086 to achieve the a slurry and product with optimal compressive strength, flexural strength, plasticity, impact resistance and dry density. See MPEP 2141 and 2144.04.

Regarding claim 25, '086 discloses a product with a water content ranging from 13.8 wt % to about 33.3 wt% which can be considered low.

23. Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jensen (US 20020047223) as applied to claim 1 above, and further in view of Kovacs et al. (WO 98/42637) referred to as '637 herein after.

Regarding claim 7-8, '223 discloses a method of making a porous cementitious product as discussed above furthermore '223 discloses incorporating bubbles within the premix by supplying or blowing air directly into the premix [0077], however, '223 does not disclose introducing gas bubbles at selected locations within the premix by use of sparging apparatus.

'637 discloses a method of making a foamed masonry product comprising a cement slurry, or cementitious premix, and where gas is dispensed within the cement slurry using an injector, wherein the injector comprises one or more lance nozzles with a plurality of capillary holes for dispersing gas at various locations within the slurry in order to create bubbles or pores within the cement mixture. '223 teaches mixing of a heated foaming agent within the premix to generate bubbles, while '637 discloses using a lance nozzle to inject gas in order to generate bubbles within the premix. Thus it would have been obvious to one of ordinary skill in the art to substitute the injection nozzle taught by '637 for the foaming agent in the method of '223 to obtain the predictable result of creating voids within a cementitious premix and producing a cementitious product that is lighter than a cementitious product without the bubbles incorporated therein. See MPEP 2141

Regarding claim 9, '637 teaches a stationary lance to introduce gas into the cementitious slurry with mixing to provide an even distribution of the gas suspension through the premix. '637 is silent about moving the lance through the slurry, however it would have been obvious to one of ordinary skill in the art to have moved the lance through the premix during injection of the gas in order to provide the injection of gas and mixing simultaneously.

24. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jensen (US 20020047223) as applied to claim 1 above, and further in view of Ainsley et al. (US 5587012) referred to as '012 herein after.

Regarding claim 24, '223 discloses a method of making a porous cementitious product as discussed above wherein heat is supplied to the cementitious slurry, however '223 does not disclose using high shear mixing to vary the temperature of the slurry or the premix rheology. '012 discloses a method of making a cementitious product comprising cementitious slurry where the slurry is mixed to achieve a specific viscosity. Thus it would have been obvious to one of ordinary skill in the art to mix the cementitious slurry in the method of '223 because '012 teaches mixing of cementitious slurries to achieve a desired viscosity and provide better flow characteristics. Additionally, the act of mixing would add energy to the slurry thereby adding heat.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jodi Cohen whose telephone number is 571-270-3966. The examiner can normally be reached on Monday-Friday 7:00am-5:00pm Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Jodi F. Cohen/  
Examiner, Art Unit 1791  
/ Carlos Lopez/  
Primary Examiner, Art Unit 1791